NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date: September ##, 2018

Region: Washington Regional Office
County: Pitt
NC Facility ID: 7400021
Inspector's Name: Yongcheng Chen
Date of Last Inspection: 09/27/2017
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): Greenville Service Company, Inc.

Facility Address:
Greenville Service Company, Inc.
5900 NW Greenville Boulevard
Greenville, NC 27835

SIC: 2833 / Medicinals And Botanicals
NAICS: 325412 / Pharmaceutical Preparation Manufacturing

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 15A NCAC 02Q .0515, 02Q .0501(c)(1)
NSPS: N/A
NESHAP: N/A
PSD: N/A
PSD Avoidance: 15A NCAC 02Q .0317
NC Toxics: 15A NCAC 02D .1100
112(r): N/A
Other: N/A

Contact Data

Facility Contact	Authorized Contact	Technical Contact
R. Hunter Copeland Environmental Engineer (252) 707-7856 5900 NW Greenville Boulevard Greenville, NC 27835	Hugh Welsh President (973) 257-8208 45 Waterview Boulevard Parsippany, NJ 07054	R. Hunter Copeland Environmental Engineer (252) 707-7856 5900 NW Greenville Boulevard Greenville, NC 27835

Application Data

Application Number: 7400021.18A and 7400021.18B
Date Received: 03/02/2018
Application Type: Modification
Application Schedule: TV-Minor

Existing Permit Data

Existing Permit Number: 05754/T96
Existing Permit Issue Date: 12/20/2016
Existing Permit Expiration Date: 11/30/2021

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2016	4.47	51.47	48.37	33.33	5.63	3.09	1.32 [Toluene]
2015	3.35	50.83	50.39	32.92	5.63	1.76	0.6106 [Hexane, n-]
2014	2.80	47.22	53.66	31.23	5.20	2.12	0.8003 [Triethylamine]
2013	3.15	44.21	61.97	29.87	4.58	1.18	0.5714 [Hexane, n-]
2012	2.87	45.26	63.10	29.35	4.54	2.15	0.9745 [Triethylamine]

Review Engineer: Richard Simpson

Review Engineer's Signature: **Date: September ##, 2018**

Comments / Recommendations:

Issue: 05754/T97
Permit Issue Date: September ##, 2018
Permit Expiration Date: August 31, 2018

I. Purpose of Application

Greenville Service Company, Inc. currently holds Title V Permit No. 05754T96 with an expiration date of November 30, 2021 for pharmaceuticals, fiber, and non-woven fabrics manufacturing facility in Greenville, Pitt County, North Carolina. The minor modification application was received on March 2, 2018 and updated May 17, 2018 to install heat exchangers on DAP Lines 1 through 5 furnace exhaust to recover thermal energy to pre-heat combustion air being fed to the furnace burners. The minor modification also included an updated modeling report that was more representative with the current operation of the facility and the deletion of insignificant and significant sources that were never built or had been removed from the facility. A May 9, 2018 email included revisions to PSD avoidance NOx formulas for the hot oil furnaces which is classified as a significant modification. The Permittee shall continue to comply with the existing permit requirements. The modifications will be submitted for comment in one complete step and per 15A NCAC 02Q .0501(c)(1).

II. Facility Description

The facility manufactures active pharmaceutical ingredients and pharmaceutical products such as:

Zyban (smoking)	Darvocet/Percocet (painkiller)
Benadryl (cold/allergy)	Sudafed (cold/allergy)
Indocet (painkiller)	Adderall (for ADD)
Zantac (heartburn)	Muscle Blockers/relaxers (for surgery)

Greenville Service Company, Inc. is located at the intersection of Highway 264 and Highway 13 in Greenville. It was formerly DSM and Catalytica Pharmaceuticals. Under the air permit of Greenville Service Company, there are two companies: Patheon and DSM Dyneema (DSM). Patheon has about 947 employees and operates the pharmaceutical area. DSM has about 350 employees and manufactures fiber and non-woven fabrics. Greenville Service Company operates 24/7, as workload dictates.

III. History/Background/Application Chronology

February 28, 2018 – Initial reports were sent by email for a proposed minor modification.

March 2, 2018 – Permit application 7400021.18A was received for a Title V minor modification and updates to the source by source TAPs section with updated modeling.

April 16, 2018 – A new insignificant activity was sent by email for Sheet Assembly Unit and DAQ approved the insignificant activity by letter dated April 16, 2018.

May 9, 2018 – The facility sent an email to revise the PSD NOx avoidance formulas for the hot oil furnaces.

May 17, 2018 – Permit application 7400021.18B was received for updates to the minor modification and request to remove sources from the permit that were never constructed or removed from the facility.

June 8, 2018 – A facility site visit was made to review the changes with the permit and to view operating sections of the facility.

March 8, 2018 – June 28, 2018 – Emails and telephone conversations were made with the facility for the modifications with updated information.

June 28 – July 27, 2018 - The facility, Washington Regional Office, and Stationary Compliance Section were requested by the Permits Section to comment on the updated modifications. Comments were received and included in the permit.

July 19, 2018 – The facility sent an email sent to revise the PSD VOC avoidance BACT formulas for DAP Lines 1 through 6. Several vents were also added in the equipment list.

July 27, 2018 – By facility email, calculations for an existing source was sent and to be added in the insignificant activity list. The source was for a Fiber Processing and Sheet Assembly Printers with I.D. No. I-B12-FLPRINTERS in Building 12.

July 30, 2018 – DRAFT permit sent to public notice and EPA for review prior to issuance. The 30-day public comment period ended **September ##, 2018** with the receipt of no comments. The 45-day EPA review period ended **September ##, 2018** with the receipt of no comments.

IV. Permit Modifications/Changes and ESM Discussion

The following table lists all modifications associated with this permit action and provides a summary of the changes from Permit No. 05754T96.

Page(s)	Section	Description of Change(s)
Cover and throughout	Throughout	Updated all tables, dates, and permit revision numbers.
Cover and throughout	Throughout	Updated all tables, dates, and permit revision numbers.
Attachment	Insignificant Activities	Per April 16, 2018 email, added Source I.D. No. I-B12-SAU-01 with description "Sheet Assembly Line" as an Insignificant Activity since the calculations provided meets the classification.
Attachment	Insignificant Activities	Per July 27, 2018 email, added Source I.D. No. I-B12-FLPRINTERS with description "Fiber Processing and Sheet Assembly Printers" as an Insignificant Activity since the calculations provided meets the classification.
The listed insignificant activity sources will not be installed and were never constructed when the facility was built.		
Attachment	Insignificant Activities	Deleted I-DAP6B-T6101B with description "polyethylene storage silo with a fabric filter with 194 square feet of filter area (ID No. S6110B)". Deleted I-DAP6B-V6112B with description "two polyethylene feed hoppers, each with a fabric filter venting indoors with 29 square feet of filter area (ID Nos. S7112A and S7112B)". I-DAP7-T7101A, I-DAP7-T7101B, I-DAP7-V7112A, I-DAP7-V7112B
Attachment	Insignificant Activities	Deleted I-DAP7-T7101A and I-DAP7-T7101B with description "two polyethylene storage silos, each with a fabric filter with 194 square feet of filter area (ID Nos. S7110A and S7110B)". Deleted I-DAP7-V7112A and I-DAP7-V7112B with description "two polyethylene feed hoppers, each with a fabric filter venting indoors with 29 square feet of filter area (ID Nos. S7112A and S7112B)".
Attachment	Insignificant Activities	Deleted I-DAP8-T8101A and I-DAP8-T8101B with description "two polyethylene storage silos, each with a fabric filter with 194 square feet of filter area (ID Nos. S8110A and S8110B)". Deleted I-DAP8-V8112A and I-DAP8-V8112B with description "two polyethylene feed hoppers, each with a fabric filter venting indoors with 29 square feet of filter area (ID Nos. S8112A and S8112B)".
6, 21	Section 1 and Section 2.1 A.	Since the boiler has been removed from the facility, deleted Source I.D. No. Boiler 1 with description "No. 2 fuel oil/natural gas-fired boiler (38.0 million Btu per hour heat input)".
8-11, 35-37	Section 1 and Section 2.1 D.	Per this permit modification, the process heaters (I.D. No. F0951 through F0955) for DAP 1-5 will be modified by installing heat exchangers in each furnace's exhaust to recover thermal energy to pre-heat combustion air being fed to the furnace burners. Description of sources added "with heat exchangers."

The listed significant sources from Polyethylene Fiber Production DAP Line 6B will not be installed and were never constructed when the facility was built.		
13, 39, 62	Section 1 and Section 2.1 D.	Deleted F0956B with description "natural gas/No. 2 fuel oil-fired hot oil process heater (7.1 million Btu per hour heat input)". Deleted HWH6B with description "natural gas/No. 2 fuel oil-fired hot water heater (9 million Btu per hour heat input)".
13, 39	Section 1 and Section 2.1 D.	Deleted V6114B with description "suspension make-up tank (Solvent introduction)". Deleted control device S6114B with description "dust collector (66 square feet of filter area)".
13, 39	Section 1 and Section 2.1 D.	Deleted V6115B with description "suspension mixing vessel". Deleted V6116B with description "suspension supply vessel".
13, 39	Section 1 and Section 2.1 D.	Deleted 6211B with description "extruder with localized exhaust hood capture system EFK". Deleted control device S0970B with description "VOC concentrator – adsorption cycle".
13, 39	Section 1 and Section 2.1 D.	Deleted V6301B and V6302B with description "two (2) quench baths with localized exhaust hood capture system EFK". Deleted B6401B with description "UDY box with localized exhaust hood capture system EFK".
14, 39	Section 1 and Section 2.1 D.	Deleted F6401B with description "primary drying oven with internal inert atmosphere (nitrogen) recirculation with localized exhaust hood capture system (EFK_) and two solvent reclaim condensers with vent to atmosphere (S6412B)". Deleted RSS6B with description "recycle solvent separator and super separator with localized exhaust hood capture system EFK".
14, 39	Section 1 and Section 2.1 D.	Deleted GBL6B-1 with description "Line No. 6B General Building Exhaust (AHU_) for fugitive VOC emissions from miscellaneous sources". Deleted F6501B with description "final drying oven with localized exhaust hood capture system K-6501, Final drying oven 'slip stream' exhaust".
14, 39	Section 1 and Section 2.1 D.	Deleted F6701B with description "final drying oven with localized exhaust hood capture system K-6701, Final drying oven 'slip stream' exhaust". Deleted GBL6B-2 with description "Line No. 6B General Building Exhausts (EFP_, EFP_, EFP_, EFP_, EFP_) for fugitive VOC emissions from miscellaneous sources".
14, 39	Section 1 and Section 2.1 D.	Deleted SWS6B with description "solvent water separator". Deleted V6415B with description "PDY waste box". Deleted X6418B with description "Knife cutter".
The listed significant sources from Polyethylene Fiber Production DAP Lines 7A and 7B will not be installed and were never constructed when the facility was built.		
14, 39, 63	Section 1 and Section 2.1 D.	Deleted F0957A and F0957B with description "two (2) natural gas/No. 2 fuel oil-fired hot oil process heaters (7.1 million Btu per hour heat input each)". Deleted HWH7A and HWH7B with description "two (2) natural gas/No. 2 fuel oil-fired hot water heaters (9 million Btu per hour heat input each)".
14, 39	Section 1 and Section 2.1 D.	Deleted V7114A with description "suspension make-up tank (Solvent introduction)". Deleted control device S7114A with description "dust collector (66 square feet of filter area)".
14, 39	Section 1 and Section 2.1 D.	Deleted V7114B with description "suspension make-up tank (Solvent introduction)". Deleted control device S7114B with description "dust collector (66 square feet of filter area)".
14, 39	Section 1 and Section 2.1 D.	Deleted V7115B, V7115B, V7116A, and V7116B with each having the description "suspension mixing vessels or "suspension supply vessels".
14, 39	Section 1 and Section 2.1 D.	Deleted 7211A and 7211B with description "two (2) extruders with localized exhaust hood capture system EFK7961". Deleted control device S0942B with description "two parallel VOC concentrators – adsorption cycle".

14, 39	Section 1 and Section 2.1 D.	Deleted V7301A, V7302A, V7301B, and V7302B with description "four (4) quench baths with localized exhaust hood capture system EFK7961". Deleted B7401A and B7401B with description "two (2) UDY boxes with localized exhaust hood capture system EFK7961".
14, 39	Section 1 and Section 2.1 D.	Deleted F7401A with description "primary drying oven with internal inert atmosphere (nitrogen) recirculation with localized exhaust hood capture system (EFK7961) and two solvent reclaim condensers with vent to atmosphere (S7412A)".
14, 39	Section 1 and Section 2.1 D.	Deleted F7401B with description "primary drying oven with internal inert atmosphere (nitrogen) recirculation with localized exhaust hood capture system (EFK7961) and two solvent reclaim condensers with vent to atmosphere (S7412B)".
14, 39	Section 1 and Section 2.1 D.	Deleted RSS7A and RSS7B with each description as "recycle solvent separator and super separator with localized exhaust hood capture system EFK7961". Deleted F7501A and F7501B with each description as "final drying oven with localized exhaust hood capture system K-7501, Final drying oven 'slip stream' exhaust". Deleted F7701A and F7701B with each description as "final drying oven with localized exhaust hood capture system K-7701, Final drying oven 'slip stream' exhaust".
14, 39	Section 1 and Section 2.1 D.	Deleted GBL7A-1 with description "Line No. 7A General Building Exhaust (AHU 17A) for general fugitive VOC emissions from miscellaneous sources". Deleted control device S0943B with description "two parallel VOC concentrators – adsorption cycle".
14, 39	Section 1 and Section 2.1 D.	Deleted GBL7B-1 with description "Line No. 7A General Building Exhaust (AHU 17B) for general fugitive VOC emissions from miscellaneous sources". Deleted GBL7-2 with description "Line Nos. 7A and 7B General Building Exhausts (EFP_, EFP_, EFP_, EFP_, EFP_) for general fugitive VOC emissions from miscellaneous sources".
14, 39	Section 1 and Section 2.1 D.	Deleted SWS7A AND SWS7B with description "two (2) solvent water separators". Deleted V 7415A and V7415B with description "two (2) PDY waste boxes". Deleted X7418A and X7418B with description "two (2) Knife cutters".
The listed significant sources from Polyethylene Fiber Production DAP Lines 8A and 8B will not be installed and were never constructed when the facility was built.		
16, 40, 63	Section 1 and Section 2.1 D.	Deleted F0958A and F0958B with description "two (2) natural gas/No. 2 fuel oil-fired hot oil process heaters (7.1 million Btu per hour heat input each)". Deleted HWH8A and HWH8B with description "two (2) natural gas/No. 2 fuel oil-fired hot water heaters (9 million Btu per hour heat input each)".
14, 40	Section 1 and Section 2.1 D.	Deleted V8114A with description "suspension make-up tank (Solvent introduction)". Deleted control device S8114A with description "dust collector (66 square feet of filter area)".
14, 40	Section 1 and Section 2.1 D.	Deleted V8114B with description "suspension make-up tank (Solvent introduction)". Deleted control device S8114B with description "dust collector (66 square feet of filter area)".
14, 40	Section 1 and Section 2.1 D.	Deleted V8115B, V8115B, V8116A, and V8116B with each having the description "suspension mixing vessels or "suspension supply vessels".
14, 40	Section 1 and Section 2.1 D.	Deleted 8211A and 8211B with description "two (2) extruders with localized exhaust hood capture system EFK8961". Deleted control device S0944 with description "two parallel VOC concentrators – adsorption cycle".
14, 40	Section 1 and Section 2.1 D.	Deleted V8301A, V8302A, V8301B, and V8302B with description "four (4) quench baths with localized exhaust hood capture system EFK8961". Deleted B8401A and B8401B with description "two (2) UDY boxes with localized exhaust hood capture system EFK8961".

14, 40	Section 1 and Section 2.1 D.	Deleted F8401A with description "primary drying oven with internal inert atmosphere (nitrogen) recirculation with localized exhaust hood capture system (EFK8961) and two solvent reclaim condensers with vent to atmosphere (S8412A)".
14, 40	Section 1 and Section 2.1 D.	Deleted F8401B with description "primary drying oven with internal inert atmosphere (nitrogen) recirculation with localized exhaust hood capture system (EFK8961) and two solvent reclaim condensers with vent to atmosphere (S8412B)".
14, 40	Section 1 and Section 2.1 D.	Deleted RSS8A and RSS8B with each description as "recycle solvent separator and super separator with localized exhaust hood capture system EFK8961". Deleted F8501A and F8501B with each description as "final drying oven with localized exhaust hood capture system K-8501, Final drying oven 'slip stream' exhaust". Deleted F8701A and F8701B with each description as "final drying oven with localized exhaust hood capture system K-8701, Final drying oven 'slip stream' exhaust".
14, 40	Section 1 and Section 2.1 D.	Deleted GBL8A-1 with description "Line No. 8A General Building Exhaust (AHU 18A) for general fugitive VOC emissions from miscellaneous sources". Deleted control device S0945 with description "two parallel VOC concentrators – adsorption cycle".
14, 40	Section 1 and Section 2.1 D.	Deleted GBL8B-1 with description "Line No. 7A General Building Exhaust (AHU 18B) for general fugitive VOC emissions from miscellaneous sources". Deleted GBL8-2 with description "Line Nos. 8A and 8B General Building Exhausts (EFP_, EFP_, EFP_, EFP_, EFP_) for general fugitive VOC emissions from miscellaneous sources".
14, 40	Section 1 and Section 2.1 D.	Deleted SWS8A AND SWS8B with description "two (2) solvent water separators". Deleted V 8415A and V8415B with description "two (2) PDY waste boxes". Deleted X8418A and X8418B with description "two (2) Knife cutters".
The listed significant sources in the next seven rows will not be installed and were never constructed due to limited production.		
18, 40	Section 1 and Section 2.1 D.	Deleted T0903 and T0904 with description "virgin solvent tanks". Deleted T0907 and T0908 with description "contaminated solvent tank". Deleted UDYTL 6B-8B with description "UDY tote loading operations".
18, 53	Section 1 and Section 2.1 E.	Deleted FL-7 and FL-8 with description "Two (2) fiber lines (4,480 pounds per day each), including exhaust fans for fiber creels, fiber impregnator, crossply machine, laminator, printer, and drum storage".
18, 55	Section 1 and Section 2.1 F.	Deleted PES-2 with description "PES Manufacturing Line No. 2, including Storage Silo, Feed Silo, Separator, and Aspirator Vent" and associated bagfilters S 02102, S 02121, S 02129, and V 02129.
18, 55	Section 1 and Section 2.1 F.	Deleted PES-3 with description "PES Manufacturing Line No. 3, including Storage Silo, Feed Silo, Separator, and Aspirator Vent" and associated bagfilters S 03102, S 03121, S 03129, and V 03129.
18, 55	Section 1 and Section 2.1 F.	Deleted PES-4 with description "PES Manufacturing Line No. 4, including Storage Silo, Feed Silo, Separator, and Aspirator Vent" and associated bagfilters S 04102, S 04121, S 04129, and V 04129.
18, 55	Section 1 and Section 2.1 F.	Deleted PES-5 with description "PES Manufacturing Line No. 5, including Storage Silo, Feed Silo, Separator, and Aspirator Vent" and associated bagfilters S 05102, S 05121, S 05129, and V 05129.
18, 55	Section 1 and Section 2.1 F.	Deleted PES-6 with description "PES Manufacturing Line No. 6, including Storage Silo, Feed Silo, Separator, and Aspirator Vent" and associated bagfilters S 06102, S 06121, S 06129, and V 06129.
Throughout Section 2.1 and 72	Section 2.1 Tables and Section 2.2 F.1.	In the previous permit, there were requirements for 15A NCAC 02D .0958: Work Practices for Sources of Volatile Organic Compounds in Section 2.1 Tables and Section 2.2 F. Per applicability of 15A NCAC 02D .0902 (e) and (f) as amended November 1, 2016, the facility's regulatory requirement for 15A NCAC 02D .0958 no longer applies to Pitt County.

44	Section 2.1 D.6.c.i.(A)	No DAP-1 emissions are vented through the control device S0937. The source was deleted from the emissions list.
44	Section 2.1 D.6.c.i.(B)	Added vents EFP5A and F1 to emissions list.
44	Section 2.1 D.6.c.ii.(C)	Added vents K2503, K2603, K2703, K2803, F3, F4, F5 and F6 to emissions list.
44	Section 2.1 D.6.c.ii.(C)	Added vents EFP25, EFP26, F7 and F8 to emissions list.
44	Section 2.1 D.6.c.iv.(B)	Added vents EFP4503, EFP4603, EFP4703, EFK012, F11, F12 and F13 to emissions list.
45	Section 2.1 D.6.c.v.(B)	Added vents EFP5503, EFP5703, F13 and F14to emissions list.
45	Section 2.1 D.6.c.vi.(B)	Added vents EFP6503 and S6503to emissions list.
46	Section 2.1 D.6.f.xix.	The Solvent Recovery System I.D. No. C-901 does not have a THC CERMS and was deleted from the emission list in this section. THC emissions were measured during a performance test to establish an emission factor, which is then added to each DAP based on number of unit operating days of the SRS (C-901).
46	Section 2.1 D.6.f.xix.	The TANKS 4.0 program has issues on operating systems currently installed on most computer systems (i.e., Windows 7.0 and later versions). EPA recommends using Section 7.1 of AP42 to correctly calculate the monthly emissions from organic liquid storage tanks. Remove the TANKS 4.0 program reference and inserted in the permit: "emission calculations from Section 7.1 of the AP42".
47	Section 2.1 D.6.h.v., 2.1 D.6.k.v., 2.1 D.6.m.iv.	Updated language from "… monitored pursuant to Section 2.1 D.5.F.xix. of this permit." to "…performance test emission factor and operating time."
47-49	Sections 2.1 D.6.h.viii., 2.1 D.6.i.iv., 2.1 D.6.j.iii., 2.1 D.6.k.viii., 2.1 D.6.l.iii., 2.1 D.6.m.vi.	Updated the PSD BACT formulas for DAP Lines 1 through 6 emission calculations to better reflex the actual operating conditions.
47-49	Sections 2.1 D.6.h.viii., 2.1 D.6.i.iv., 2.1 D.6.j.iii., 2.1 D.6.k.viii., 2.1 D.6.l.iii., 2.1 D.6.m.vi.	Updated the solvent VOC loss language in (pounds/month) from "…the monthly VOC emissions for the previous 6 calendar months, and dividing the sum by the total number of months that the manufacturing line operated during the 6-month period." to "…summing all of the hourly averages in the previous 6 calendar months and divide by the total number of operating hours." The change was made to give equal weight to all operating hours and is representative of the true 6-month rolling average.
70	Section 2.2 E.	Updated the 15A NCAC 02Q .0317 avoidance condition formula that includes an NOx emission factors table. Included limitations of No. 2 fuel oil usage for each applicable source at 300 hours per year.
76	Section 2.2 F.3.	Updated all 15A NCAC 02D .1100 modeled sources for formaldehyde and toluene per March 2, 2018 facility permit application for an air toxics modeling demonstration approved by the Division of Air Quality per memo dated May 17, 2018. Deleted the following sources that are no longer at the facility: FL-7, FL-8, and Boiler 1. Deleted C-0901 with description "Solvent Recovery" from the section since the source has no HAPs or TAPs.

22-24	Section 3.	The General Conditions were updated to the latest version of DAQ shell version 5.2 04/03/2018.

There were changes made to the Title V Equipment Editor (TVEE) under this permit modification.

V. Regulatory Review/Equipment Changes

The facility is currently subject to the following regulations:

a. 15A NCAC 02D .0503, "Particulates from Fuel Burning Indirect Heat Exchangers"
b. 15A NCAC 02D .0515, "Particulates from Miscellaneous Industrial Processes"
c. 15A NCAC 02D .0516, "Sulfur Dioxide Emissions from Combustion Sources"
d. 15A NCAC 02D .0521, "Control of Visible Emissions"
e. 15A NCAC 02D .0524, "New Source Performance Standards (40 CFR 60, Subpart Dc)"
f. 15A NCAC 02D .0524, "New Source Performance Standards (40 CFR 60, Subpart GG)"
g. 15A NCAC 02D .0524, "New Source Performance Standards (40 CFR 60, Subpart HHH)"
h. 15A NCAC 02D .0524, "New Source Performance Standards (40 CFR 60, Subpart IIII)"
i. 15A NCAC 02D .0530, "Prevention of Significant Deterioration (BACT for VOC)"
j. 15A NCAC 02D .1806, "Control and Prohibition of Odorous Emissions"
k. 15A NCAC 02D .1100, "Toxic Air Pollutant Emissions Limitation and Reporting Requirements"
l. 15A NCAC 02D .1111, "Maximum Achievable Control Technology (MACT - Avoidance)"
m. 15A NCAC 02D .1111, "Maximum Achievable Control Technology (40 CFR 63, Subpart ZZZZ)"
n. 15A NCAC 02D .1111, "Generally Achievable Control Technology (40 CFR 63, Subpart JJJJJJ)"
o. 15A NCAC 02Q .0317, "Avoidance Conditions (for 15A NCAC 02D .1111, MACT Avoidance)"
p. 15A NCAC 02Q .0317, "Avoidance Conditions (VOC, SO_2, and NO_x limitations to avoid PSD permitting per 15A NCAC 2D .0530)"
q. 15A NCAC 02Q .0711, "Emission Rates Requiring a Permit"

An extensive review for each applicable regulation is not included in this document. Per applicability of 15A NCAC 02D .0902 (e) and (f) as amended November 1, 2016, the facility's regulatory requirement for 15A NCAC 02D .0958 no longer applies to Pitt County. The facility's status with respect to all regulations has not changed. For a discussion of MACT, CAM, and PSD requirements, see Section 6. The permit will be updated to reflect the most current stipulations for all applicable regulations. Detail changes are noted in the above Table of Changes.

Greenville Service Company (DSM Dyneema, LLC) sent a permit application 7400021.18A and received by our office on March 2, 2018. The application was classified as minor modification. The modification is part of the facility's sustainability improvements program to improve the energy efficiency of the process heaters associated with DAP 1 through 5 production lines. The objective of the project is to reduce not only energy consumption in the form of natural gas combustion, but the project will also reduce greenhouse gas emissions. The five (5) DAP process heaters have a heat input rating between 4.7 and 6.1 million British thermal units per hour (mmBtu/hr). The process heaters for DAP 1-5 will be modified by installing heat exchangers in each furnace's exhaust to recover thermal energy to pre-heat combustion air being fed to the furnace burners. To optimize the combustion process, minor changes will be made to the heater burners to accommodate the increased temperature of the combustion air. DSM Dyneema is anticipating an overall increase in the efficiency of each process heater by seven to eight percent (7-8%) with a natural gas reduction by approximately 12 million standard cubic feet per year. The improved combustion efficiency should also yield an annual reduction in greenhouse gas emissions of approximately 600 metric tons per year.

Minor modification 7400021.18A sent March 2, 2018 also included an updated toxics air pollutant modeling report for source by source limits associated with natural gas sources (i.e. hot water heaters, hot oil furnaces, regenerative thermal oxidizers, etc.). Several of the previous limits were not representative of the existing sources and were too low. Therefore, the facility modeled the applicable sources and updates were made to permit Section 2.2 F.3 for formaldehyde and toluene. The modeling demonstration was approved by the Division of Air Quality per memo dated May 17, 2018.

A new insignificant activity was sent by email for Sheet Assembly Unit (I.D. No. I-B12-SAU-01) as Addendum 1 to permit application 7400021.18A. Estimated calculations proved the source qualified as an insignificant activity and an DAQ approval letter was sent on April 16, 2018.

After initial review of minor modification 7400021.18A, the proposal did not include the use of No. 2 fuel oil for the process heaters and the facility wanted to keep that option. After several conference calls in the month of April, the facility agreed to send an updated version which was received by email on May 1, 2018 and a signed version received on May 17, 2018. The facility noted that the 15A NCAC 02Q .0317 avoidance condition formula for NOx was incorrect in permit Section 2.2. E. An updated formula proposal was sent on May 9, 2018 by email. The May 17, 2018 update requested to delete permitted sources that were never built about 10 years ago and/or removed from the facility. With the updated revisions during the month of May, permit application 7400021.18B was created and classified as a significant modification.

VI. NSPS, NESHAP/MACT, PSD, CAM, 112(r), and RACT:

New Source Performance Standards (NSPS)

15A NCAC 02D .0524 – New Source Performance Standard for Synthetic Fibers Production Facilities – NSPS (Subpart HHH) applies to solvent-spun synthetic fiber processes. The rule defines a solvent-spun synthetic fiber process to include "spinning solution preparation, spinning, fiber processing, and solvent recovery….". The existing DAP lines are affected by the NSPS. Because the overall VOC emissions from the fiber manufacturing lines currently appear to be in compliance with the far more stringent BACT emissions limitations, the NC DAQ anticipates that DAP lines will continue to be in compliance with the NSPS standard. This permit modification to DAP Lines 1-5 does not affect this status.

40 CFR 60, Subpart HHH limits overall VOC emissions from the fiber manufacturing process to no greater than 34 pounds per ton of solvent used (lbs/ton solvent). In the existing permit, testing, monitoring, and recordkeeping associated with the NSPS limit are identical to the requirements for demonstrating compliance with the BACT limit. The BACT limit for each fiber manufacturing line shall not exceed 12 pounds per ton of solvent feed on a calendar month basis. This permit modification to DAP Lines 1-5 does not affect this status.

There are no other additional New Source Performance Standards (NSPS) rules that apply to this modification.

National Emission Standards for Hazardous Air Pollutants (NESHAP)/Maximum Achievable Control Technology (MACT)/ Generally Achievable Control Technology (GACT)

The existing permit has a MACT avoidance condition (15A NCAC 2Q .0317) in Section 2.2. F.2. that requires monthly monitoring of facility-wide hazardous air pollutant (HAP) emissions and semiannual reporting of such emissions. Facility-wide emissions shall not exceed 10 tons per year (tpy) of any individual HAP or 25 tpy combined total HAPs to avoid applicability of any potentially applicable MACT standards. DSM proposes to continue complying with this 10 tpy/25 tpy emission limitation to avoid MACT applicability. This permit modification does not affect this status.

Prevention of Significant Deterioration (PSD)/National Ambient Air Quality Standards (NAAQS)

The facility is currently classified as a **Major** stationary source for the purpose of the Prevention of Significant Deterioration (PSD) permitting program. VOC, SO_2, and NO_x requirements and limitations are applicable to avoid PSD permitting per 15A NCAC 2D .0530.

As noted in the previous section, DAP Lines 1 through 5 will install heat exchangers in each furnace's exhaust to recover thermal energy to pre-heat combustion air being fed to the furnace burners. The process heaters are subject to both nitrogen oxides (NO_x) and sulfur dioxide (SO_2) limits set in **Permit Section 2.2 E.1.a and 2.2 E.2.a** of the air quality permit, respectively. Total annual NO_x emissions from the combustion of natural gas and No. 2 fuel oil associated with the DAP process heaters, DAP hot water heaters and the Bldg. 46 Concentrator must not exceed 28 tons in any 12-consecutive month period to avoid applicability of 15A NCAC 02D.0530 for major sources and major modifications. The total annual SO_2 emissions must not exceed 39 tons. This modification will stay below the existing NO_x and SO_2 limitations and conditions.

The facility demonstrated calculations for PSD purposes. The procedures for calculating project significant emissions increases and significant net emissions increases are contained in 15A NCAC 02D .0530. These calculations can be made in accordance with 40 CFR 51.166(a)(7)(iv)(c and d) using projected actual emissions or by using potential to emit after the project. The second operating scenario, actual emissions to potential emission estimates, were more than twice as much as actual-to-projected-actual emissions. Therefore, the emission estimates for the modifications to DAP process heaters 1-5 will focus on the second scenario.

For actual emissions to potential to emit, a much more conservative analysis, each unit was analyzed as it operated at the full permitted heat input rating for every hour in a calendar year (8,760 hours). A nominal gross caloric value (GCV) of 1,020 British thermal units (Btu) per standard cubic foot of natural gas combusted was used to calculate the estimated annual natural gas usage at 100% annual capacity for 8,460 hours. The remaining 300 hours of operation assume combustion of fuel oil with a nominal GCV of 142,000 Btu per gallon.

Tables 1 and 2 below show that the proposed modifications to the DAP 1-5 process heaters will not result in significant emission increases for either NO_x or SO_2 to trigger a PSD review. Based on an engineering estimate of a 40% increase in NO_x concentrations due to the proposed heater modifications, the overall potential annual NO_x emissions will increase from 6.90 to 24.25 tons per year (see Table 1). For SO_2, the proposed heater modifications will have minimal impact on overall potential annual SO_2 emissions. The potential to emit for SO_2 increased to of 0.354 tons per year. The estimated potential NO_x and SO_2 emission increases, after the proposed modifications have been implemented, will be below the PSD significance levels in the amount of 28 tons of NO_x and 39 tons of SO_2.

Table 1 - Demonstration of NO_x PSD Avoidance for Proposed Heater Modifications for Actual to Potential to Emit Test

Name	Permit ID	Heat Input	Actual Fuel Use (Baseline)		Future Fuel Use (Potential to Emit)		
		(mmBtu/ hr)	Gas Flow (scf/yr)	NO_x (tons)	Gas Flow[1] (scf/year)	Oil[1] (gal/yr)	NO_x (tons)
DAP 1 Hot Oil	F0951	6.10	17,863,007	0.93	48,064,412	12,887	3.68
DAP 2 Hot Oil	F0952	5.80	26,291,694	1.24	45,700,588	12,254	3.19
DAP 3 Hot Oil	F0953	5.60	27,144,422	1.37	44,124,706	11,831	3.27
DAP 4 Hot Oil	F0954	5.70	31,927,455	1.41	44,912,647	12,042	2.93
DAP 5 Hot Oil	F0955	4.70	32,185,038	1.30	37,033,235	9,930	2.23
DAP 6 Hot Oil	F0956	4.70	22,181,006	0.29	37,033,235	9,930	0.62
DAP 1 Hot Water	HWH1	8.10	205,119	0.00	63,823,235	17,113	1.42
DAP 2 Hot Water	HWH2	6.10	1,415,341	0.03	48,064,412	12,887	1.07
DAP3 Hot Water	HWH3	7.90	869,944	0.02	62,247,353	16,690	1.38
DAP 4 Hot Water	HWH4	7.90	1,195,616	0.02	62,247,353	16,690	1.38
DAP 5 Hot Water	HWH5	6.00	444,321	0.01	47,276,471	12,676	1.05
DAP 6 Hot Water	HWH6a-C	5.25	278,523	0.01	41,366,912	11,092	0.53
Bldg. 46 Conc.	S0937	2.90	4,418,988	0.27	22,850,294	6,127	1.50
		Total:	**166,420,472**	**6.90**	**604,744,853**	**162,148**	**24.25**

[1]Values based on the permitted heat input rating of the unit operating at full capacity for 8460 hours combusting natural gas with nominal higher heating value of 1,020 Btu per standard cubic foot and 300 hours combusting No. 2 fuel oil with a nominal higher heating value of 142,000 Btu per gallon.

Table 2 – Demonstration of SO_2 PSD Avoidance for Proposed Heater Modifications for Actual to Potential to Emit Test

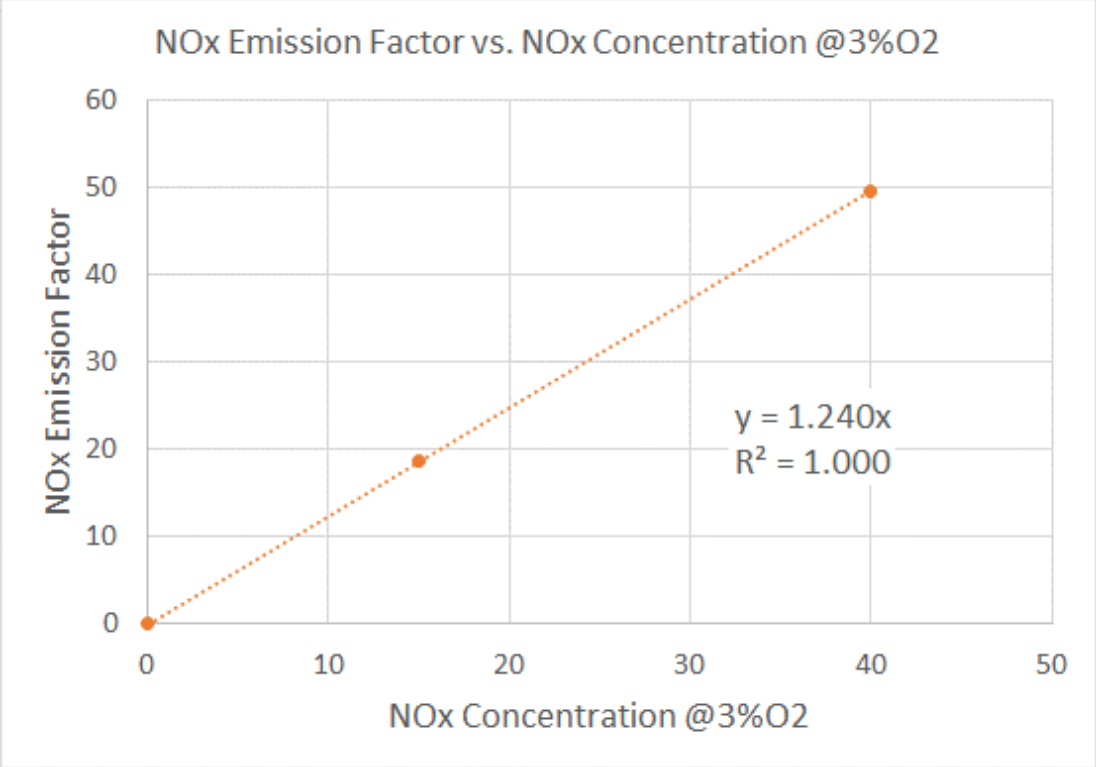
Name	Permit ID	Heat Input	Actual Fuel Use (Baseline)		Future Fuel Use (Potential to Emit)		
		(mmBtu/ hr)	Gas Flow (scf/yr)	SO_2 (tons)	Gas Flow (scf/year)	Oil (gal/yr)	SO_2 (tons)
DAP 1 Hot Oil	F0951	6.10	17,863,007	0.005	48,064,412	12,887	0.028
DAP 2 Hot Oil	F0952	5.80	26,291,694	0.008	45,700,588	12,254	0.027
DAP 3 Hot Oil	F0953	5.60	27,144,422	0.008	44,124,706	11,831	0.026
DAP 4 Hot Oil	F0954	5.70	31,927,455	0.010	44,912,647	12,042	0.026
DAP 5 Hot Oil	F0955	4.70	32,185,038	0.010	37,033,235	9,930	0.022
DAP 6 Hot Oil	F0956	4.70	22,181,006	0.007	37,033,235	9,930	0.022
DAP 1 Hot Water	HWH1	8.10	205,119	0.000	63,823,235	17,113	0.037
DAP 2 Hot Water	HWH2	6.10	1,415,341	0.000	48,064,412	12,887	0.028

DAP3 Hot Water	HWH3	7.90	869,944	0.000	62,247,353	16,690	0.036
DAP 4 Hot Water	HWH4	7.90	1,195,616	0.000	62,247,353	16,690	0.036
DAP 5 Hot Water	HWH5	6.00	444,321	0.000	47,276,471	12,676	0.028
DAP 6 Hot Water	HWH6a-C	5.25	278,523	0.000	41,366,912	11,092	0.024
Bldg. 46 Conc.	S0937	2.90	4,418,988	0.001	22,850,294	6,127	0.013
		Total:	**166,420,472**	**0.050**	**604,744,853**	**162,148**	**0.354**

As noted in the previous section facility, the noted that the 15A NCAC 02Q .0317 avoidance condition formula for NO_x in **Permit Section 2.2 E.1.c.** was incorrect. An updated formula proposal was sent on May 9, 2018 by email. In the current DSM permit, the NOx equation uses two emission factors to calculate NOx pounds emitted per million cubic feet of natural gas combusted. For units rated at 40 ppm, the NOx emission factor is 49.6. For units rated at 15 ppm, the NOx emission factor is 18.6. The current equation for determining NOx emissions from the combustion of natural gas assumes NOx concentrations for each of the units operating at DSM based on manufacturer's guarantees.

$$E_{NOx} = (20 * Q_{FO2}) + (100 * Q_{ng,S0937}) + (49.6 * Q_{ng,40ppm}) + (18.6 * Q_{ng,15ppm})$$

If you plot these two points, you can calculate a correlation equation to provide a NOx emission factor for any measured NOx concentration measured at 3% O2. The graph provided below shows a correlation factor of 1.24, which means the proper NOx emission factor for each unit would be the measured NOx concentration @3% O2 times 1.24. The NOx mass emission rate would be calculated by multiplying the NOx emission factor (i.e., 1.24 times the NOx concentration @3% O2) times the natural gas combusted in units of million standard cubic feet.



With the proposed change in the DAP 1-4 hot oil furnace operation and documentation showing NOx concentrations at 3 %O2 for the hot oil furnaces varying from source to source. The current equation in the permit does not accurately reflect NOx emissions. DSM is proposing to update the equation to reflect both measured NOx concentration values and/or certified from the manufacturer NOx concentration values.

$$E_{NOx} = (20 \times Q_{FO2}) + (1.24 \times C_{NOx@3\%O2(i)} * Q_{ng(i)})$$

Where:

E_{NOx}	**= NO_x emissions (in lbs) during previouscalendar month**
Q_{FO2}	**= No. 2 fuel oil usage during previous calendar month (1,000 gallons)**
$C_{NOx@3\%O2(i)}$	**= Measured or manufacturer guaranteed NO_x concentration at 3% O_2 (ppm)**
$Q_{ng(i)}$	**= Quantity of natural gas fired at the affected sources during previous calendar month (million standard cubic feet)**
i	**= Affected unit**

DSM has documentation for each of the process units that combust natural gas in the form of either manufacturer certification stating the NOx concentration at 3%O_2 is below a specific threshold (i.e., 30 ppm for the hot water heaters) or through routine measurements conducted during burner inspections.

To verify the above NOx emission factor, the NOx mass emissions can be calculated using the stoichiometric combustion of natural gas. Tables 1-2 show the stoichiometric calculations for each DSM combustion source. Example calculations are provided for DAP-1 Hot Oil Furnace (F0951). Table 3 provides a comparison of the two calculation methods.

Assumptions:

Natural Gas Content – 95% Methane & 5% Ethane GCV –

1020 Btu/scf

Excess Air – 16%

Example Calculation for Table 1:

$$Maximum\ Gas\ Flow = \frac{6.10\ mmBtu}{hr} \times \frac{scf}{1020\ Btu} \times \frac{1e6\ Btu}{mmBtu} = 5{,}980\ \frac{scf}{hr}$$

$$Methane\ Flow = 5{,}980\ \frac{scf}{hr} \times 0.95 = 5{,}681\ \frac{scf}{hr}$$

$$Ethane\ Flow = 5{,}980\ \frac{scf}{hr} \times 0.05 = 299\ \frac{scf}{hr}$$

$$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$$

$$C_2H_6 + 3.5O_2 \rightarrow 2CO_2 + 3H_2O$$

$$Stoichiometric\ O_2 = (5{,}681 \times 2) + (299 \times 3.5) = 12{,}409\ \frac{scf}{hr}$$

$$Excess\ O_2 = ((1 + \frac{16}{100}) \times 12{,}409) - 12{,}409 = 1{,}985 \frac{scf}{hr}$$

$$Total\ Air = 12{,}409 + 1{,}985 + ((12{,}409 + 1{,}985) \times 3.79) = 68{,}951\ \frac{scf}{hr}$$

Table 1 – Stoichiometric Inputs for Combustion

Unit ID	Heat Input	Max. Gas Flow	Methane	Ethane	Stoichiometric O2	Excess O2	Total Air
	(mmBtu/hr)	(scfh)	(scfh)	(scfh)	(scfh)	(scfh)	(scfh)
F0951	6.10	5,980	5,681	299	12,409	1,985	68,951
HWH1	8.10	7,941	7,544	397	16,478	2,636	91,558
F0952	5.80	5,686	5,402	284	11,799	1,888	65,560
HWH2	6.10	5,980	5,681	299	12,409	1,985	68,951
F0953	5.60	5,490	5,216	275	11,392	1,823	63,299
HWH3	7.90	7,745	7,358	387	16,071	2,571	89,297
F0954	5.70	5,588	5,309	279	11,596	1,855	64,430
HWH4	7.90	7,745	7,358	387	16,071	2,571	89,297
F0955	4.70	4,608	4,377	230	9,561	1,530	53,126
HWH5	6.00	5,882	5,588	294	12,206	1,953	67,821
F0956	4.70	4,608	4,377	230	9,561	1,530	53,126
HWH6a-C	5.25	5,147	4,890	257	10,680	1,709	59,343
S0937	2.90	2,843	2,701	142	5,900	944	32,780

Example Calculations for Table 2:

$$CO2 = 5{,}681 + (299 \times 2) = 6{,}279 \ \frac{scf}{hr}$$

$$H2O = (5{,}681 \times 2) + (299 \times 3) = 12{,}260 \ \frac{scf}{hr}$$

$$N2 = (12{,}409 + 1{,}985) \times 3.79 = 54{,}556 \ \frac{scf}{hr}$$

$$O2 = 1{,}985 \ \frac{scf}{hr}$$

$$Total\ Exhaust\ Flow = 6{,}279 + 12{,}260 + 54{,}556 + 1{,}985 = 75{,}081 \ \frac{scf}{hr}$$

$$\%H2O = \frac{12{,}260}{75{,}081} \times 100 = 16.33\%$$

$$\%O2(dry) = \frac{1{,}985}{(75{,}081 - 12{,}260)} \times 100 = 3.16\%$$

$$Total\ Dry\ Exhaust\ Flow = 6{,}279 + 54{,}556 + 1{,}985 = 62{,}821 \ \frac{scf}{hr}$$

Table 2 – Major Products of Natural Gas Combustion

Unit ID	CO2 (scfh)	H2O (scfh)	N2 (scfh)	O2 (scfh)	Total Exhaust Flow (scfh)	H2O (%)	O2 (%dry)
F0951	6,279	12,260	54,556	1,985	75,081	16.33%	3.16%
HWH1	8,338	16,279	72,444	2,636	99,698	16.33%	3.16%
F0952	5,971	11,657	51,873	1,888	71,389	16.33%	3.16%
HWH2	6,279	12,260	54,556	1,985	75,081	16.33%	3.16%
F0953	5,765	11,255	50,084	1,823	68,927	16.33%	3.16%
HWH3	8,132	15,877	70,655	2,571	97,236	16.33%	3.16%
F0954	5,868	11,456	50,979	1,855	70,158	16.33%	3.16%
HWH4	8,132	15,877	70,655	2,571	97,236	16.33%	3.16%
F0955	4,838	9,446	42,035	1,530	57,849	16.33%	3.16%
HWH5	6,176	12,059	53,662	1,953	73,850	16.33%	3.16%
F0956	4,838	9,446	42,035	1,530	57,849	16.33%	3.16%
HWH6a-C	5,404	10,551	46,954	1,709	64,619	16.33%	3.16%
S0937	2,985	5,828	25,937	944	35,694	16.33%	3.16%

Example Calculation Table 3:

$$NOx = 84 \times \left(\frac{20.9 - 3.16}{20.9 - 3.0}\right) = 83.25\ ppmd$$

$$Stoichiometric\ NOx\ Mass = 83.25\ ppmd \times 1.194e-7\ \frac{lb}{scf - ppmd} \times 62{,}821\ \frac{scf}{hr} = 0.62\ \frac{lb}{hr}$$

$$NOx\ Emission\ Factor = 84\ ppm\ @\ 3\%O2 \times 1.24 = 104.16$$

$$Emission\ Factor\ NOx\ Mass = 5{,}980\ \frac{scf}{hr} \times 104.16\ \frac{lb}{mmscf} \times 1e-6\ \frac{mmscf}{scf} = 0.62\ \frac{lb}{hr}$$

Table 3 – Comparison of Stoichiometric & NOx Emission Factor Mass Rate Calculations

Unit ID	Stoichiometric NOx Mass Emission Rate				NOx Emission Factor			Difference
	NOx @3%O2	NOx	Total Flow	NOx	Gas Usage	NOx Factor	NOx	NOx
	(ppmd)	(ppmd)	(dscfh)	(lb/hr)	(scfh)	(lb/mmscf)	(lb/hr)	(lb/hr)
F0951	84	83.25	62,821	0.62	5,980	104.16	0.62	0.00
HWH1	30	29.73	83,418	0.30	7,941	37.2	0.30	0.00
F0952	76	75.32	59,732	0.54	5,686	94.24	0.54	0.00
HWH2	30	29.73	62,821	0.22	5,980	37.2	0.22	0.00
F0953	81	80.27	57,672	0.55	5,490	100.44	0.55	0.00
HWH3	30	29.73	81,359	0.29	7,745	37.2	0.29	0.00
F0954	71	70.36	58,702	0.49	5,588	88.04	0.49	0.00
HWH4	30	29.73	81,359	0.29	7,745	37.2	0.29	0.00
F0955	65	64.42	48,403	0.37	4,608	80.6	0.37	0.00
HWH5	30	29.73	61,791	0.22	5,882	37.2	0.22	0.00
F0956	21	20.81	48,403	0.12	4,608	26.04	0.12	0.00
HWH6a-C	30	29.73	54,067	0.19	5,147	37.2	0.19	0.00
S0937	100	99.10	29,866	0.35	2,843	124	0.35	0.00

The facility provided draft permit comments on July 19, 2018. The facility noticed that several areas of permit Section 2.1 D.6. needed to be corrected to realistic operating conditions. This section is for 15A NCAC 02D .0530 PSD with BACT determination for VOC emission rates. The existing VOC emission limit from each of the fiber manufacturing lines (ID Nos. DAP1 through DAP6) including emissions from the solvent tanks and undrawn yarn (UDY) tote loading operations, shall not exceed 12 pounds per ton of solvent feed (lbs/ton solvent) on a calendar month basis. Several vents were added in this section (See Table of Changes) along with updates to the formula used to calculate the VOC emissions. An example of the previous formula for DAP Line 1 is:

$$L_1 = \frac{Q_{GBL1\text{–}1} + Q_{GBL1\text{–}2} + \left(\frac{M_1}{M_1 + M_2 + M_3}\right)\left(Q_{F0935} + Q_{C-0901} + Q_{T0901\text{-}T0902} + 56 * 0.29 * UDY_{1\text{–}3}\right)}{M_1}$$

The updated formula example for DAP Line 1 is:

$$L_1 = \frac{Q_{GBL1-1}+Q_{GBL1-2}+\left[\left(\frac{M_1}{M_1+M_2+M_3}\right)\times\left(Q_{F0935}+Q_{T0901}+(56\times 0.29\times UDY_{1-3})\right)\right]+\left[\left(\frac{M_1}{M_1+M_2+M_3+M_4+M_5+M_6}\right)\times\left(Q_{C-0901}+Q_{T0902}+Q_{T0906}\right)\right]}{M_1}$$

One of the changes to the formula was for source C-0901 since the source emissions are measured based on a performance test to derive an emission factor. The emission factor is then added to each DAP based on number of unit operating days. The tanks emission calculations that are associated with the formulas were also updated. The TANKS 4.0 program has issues on operating systems currently installed on most computer systems (i.e., Windows 7.0 and later versions). EPA recommends using Section 7.1 of AP42 to correctly calculate the monthly emissions from organic liquid storage tanks. All six formulas for DAP Lines 1 through 6 were updated.

Pitt County has triggered increment tracking under PSD for nitrogen oxide, (NO_X). However, this minor modification permit does not consume or expand increments for any pollutants.

CAM – 40 CFR 64 requires that a continuous assurance monitoring plan be developed for all equipment located at a major facility, that have pre-controlled emissions above the major source threshold, and use a control device to meet

an applicable standard. CAM was found not to be applicable for all control devices because potential uncontrolled emissions were below the applicability threshold. This permit action does not affect this status.

112(r) – The facility is not subject to Section 112(r) of the Clean Air Act requirements because it does not store any of the regulated substances in quantities above the thresholds in the Rule. This permit modification does not affect this status.

RACT – This facility is not located in one of the areas listed in 02D .0902(e) or 02D .1402(d) and is therefore not subject to the existing source Reasonably Available Control Technology (RACT) requirements, other than 02D .0958.

VII. Facility Wide Air Toxics (State Enforceable Only)

Pursuant to 15A NCAC 02D .1100 and in accordance with the approved application for an air toxic compliance demonstration, the emission limits contained in current permit shall not be exceeded. To ensure compliance with these regulations the Permittee shall maintain records of production rates, throughput, material usage, and other process operational information as is necessary to determine compliance with the air toxic emission limits specified above for a minimum of five years from the date of recording.

Greenville Service Company's Current Permit No. 00575T95 includes permit conditions under 02D .1100 based on previous application submittals. The permit requires the facility to either (1) maintain records sufficient to demonstrate that facility-wide emissions of those toxic air pollutants (TAPs) are below the associated toxic air pollutant permitting emissions rates (TPER), or (2) obtain a permit to emit a TAP before exceeding the TPER associated with that TAP as well as 02D .1100 modeled emission rates.

From a previous boiler permit application in 2012, the facility triggered the toxic permit emission rate (TPER) found in 02Q .0711 for formaldehyde and toluene. Please refer to Greenville Service Company's Air Dispersion Modeling Review performed by Alex Zarnowski, Meteorologist I, Air Quality Analysis Branch (AQAB) dated September 27, 2013. An air dispersion modeling exercise was conducted using AERMOD. The modeling did demonstrate compliance on a source-by-source basis with the NC Acceptable Ambient Level (AAL) found in 02D .1104. Toluene at a 24-hour averaging period had the highest impact at about 70% of the AAL.

As noted in Section V above, the modification sent March 2, 2018 also included an updated toxics air pollutant modeling report for source by source limits associated with natural gas sources (i.e. hot water heaters, hot oil furnaces, regenerative thermal oxidizers, etc.). Previous emission limits were not representative of the existing sources and were too low. Therefore, the facility modeled the applicable sources and updates were made to permit Section 2.2 F.3. for formaldehyde and toluene. The modeling did demonstrate compliance on a source-by-source basis with the NC Acceptable Ambient Level (AAL) found in 02D .1104 per Air Dispersion Modeling Review performed by Alex Zarnowski, Senior Meteorologist, Air Quality Analysis Branch (AQAB) dated May 17, 2018.

Based on several discussions with the facility, there were sources that were removed from this permit that were on the previous permit. The following sources were deleted from Section 2.2 F.3. since they were never built when DSM was initially constructed and have been removed from all areas of the permit: FL7, FL8, F0972B, F0938, F0939, F0956B, HWH6B, F0957A, F0957B, HWH7A, HWH7B, F0958A, F0958B, HWH8A, and HWH8B. The following sources were deleted since they are not at the facility or did not contain TAPs in Section 2.2 F.3.: Boiler 1, Temporary Boiler, and C-0901. The permit's TAPs section includes the adjustments with the proposed modification. Based on this toxics evaluation method, the DAQ believes that the modifications and changes associated with these applications do not present an unsafe health risk to the public.

VIII. Facility Emissions Review

The actual emissions of the last five years are listed in the first page of this review. Based on the emissions inventory, the actual emissions of all HAPs are below the Title V applicability thresholds.

IX. Compliance Status

Over the past five years, the facility was issued an NOV/NRE on July 24, 2015 for self-reporting a low flow condition on a scrubber beginning March 16, 2015. The low flow resulted in the inability to maintain the permit-required scrubber flow rate of three gallons per minute. The facility responded to the violation and numerous corrective actions were implemented by the facility in a timely manner. The NRE was signed on March 17, 2016.

X. Public Notice/EPA and Affected State(s) Review

A thirty-day public notice period and a forty-five-day EPA review period is required for this modification of the Title V permit. A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit pursuant shall be provided to the EPA. Also pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice is provided to the public under 02Q .0521 above.

EPA's 45 Day Review Period
Ms. Heather Ceron (U.S. EPA, Region IV) was provided a PROPOSED permit for review on July ##, 2018. EPA 45-day review period ended on September ##, 2018. No comments were offered or received.

Public Notice
The 30-day public notice of the proposed permit was posted on the NCDAQ website on July ##, 2018. No comments were offered or received.

XI. Other Regulatory Considerations

- A P.E. seal is NOT required for this application.
- A zoning consistency determination is NOT required for this modification.
- An application fee is required for this modification.
- Pitt County has triggered increment tracking under PSD for nitrogen oxide, (NO_X). However, this minor modification permit does not consume or expand increments for any pollutants.

XII. Recommendations

The permit modification application for Greenville Service Company in Greenville, Pitt County, North Carolina has been reviewed by DAQ to determine compliance with all procedures and requirements. DAQ has determined that this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources. The DAQ recommends the issuance of Air Permit No. 05754T97.